

## CLIMATOLOGICAL DATA FOR JUNE, 1913.

## DISTRICT NO. 4, THE LAKE REGION.

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## GENERAL SUMMARY.

Great extremes of temperature, deficient precipitation, and a remarkably large number of clear days with consequent high percentage of sunshine characterized the weather in the Great Lakes region during the month of June, 1913. The first decade of the month brought low temperatures which equaled or exceeded the previous June records of minimum readings for the past 40 years at many points throughout the entire district, while the closing days of the month, particularly the 30th, gave high temperatures which in turn equaled or exceeded the highest June maximums in former years. At a few stations in Indiana and Ohio both maximum and minimum temperature records were broken during the month—an unusual occurrence.

The precipitation was unevenly distributed and fell almost entirely during local thundershowers, which were quite frequent, Erie, Pa., reporting a total of 12, and many other stations experiencing from 7 to 10. A number of these storms were destructive to property and they will be touched upon briefly in another paragraph. As might be expected from the great number of clear, sunshiny days which in the central sections exceeded all previous records, the relative humidity was much below the normal; and this fact still further accentuated the deficiency in rainfall as the evaporation of moisture from soil and foliage was rapid, and combined with the intense heat during the latter half of the month, caused considerable damage to all kinds of vegetation in many sections.

The following table summarizes the chief features of meteorological interest in the various portions of the district:

Portions of States.	Mean temperature.	Departure from normal.	Mean daily range.	Mean precipitation.	Departure from normal.	Greatest precipitation in 24 hours.	Mean snowfall.	Number of days.			Prevailing wind direction.
								With .01 inch or more.	Clear.	Partly cloudy.	
Minnesota.....	59.6	+1.5	21.0	2.54	-1.92	1.07	0	8	16	10	4 ne.
Wisconsin.....	65.7	+2.3	20.0	2.94	-0.34	3.25	0	8	19	7	4 sw.
Illinois.....	70.5	+4.2	17.0	1.08	-2.58	0.62	0	6	17	8	5 sw.
Indiana.....	70.7	+2.1	23.4	0.89	-2.75	0.80	0	5	21	6	3 sw.
Upper Michigan.....	62.2	+3.2	21.6	3.15	+0.20	2.10	T.	7	18	6	6 s.
Lower Michigan.....	67.0	+1.9	21.8	1.91	-1.09	1.63	0	5	19	7	4 sw.
Ohio.....	68.9	+0.6	18.7	1.64	-2.09	1.81	0	6	20	7	3 sw.
Pennsylvania.....	65.9	-1.1	16.2	2.79	-0.96	0.98	0	9	17	11	2 w.
New York.....	63.2	-1.0	20.4	2.32	-1.47	2.90	0	9	18	9	3 w.
Vermont.....	61.2	-3.1	25.8	2.42	-1.25	1.32	0	8	11	15	4 s.

## TEMPERATURE.

Over all portions of the district the first half of the month, with the exception of the 1st and 6th, was marked by temperatures much below the normal; and light to heavy, and in many instances killing frosts occurred on the 8th, 9th, and 10th. In the central and eastern sec-

tions this cold period was the most severe, and minimum readings as low as or lower than any previously recorded for the month of June were reported. Temperatures but slightly above freezing were general over Indiana, southern lower Michigan, and Ohio on the mornings of the 9th and 10th, where light to heavy frosts were reported, doing considerable damage to fruit and other vegetation. In the interior portions of New York State and especially along the southern limits of the district, this cool wave caused still lower readings, Perry and Angelica each recording the unseasonably low temperature of 26° on the 9th. It was in this section of the State that killing frost formed, and farm and garden products in many localities were entirely destroyed by the unusual freeze, which is reported as the most extensive that has occurred in June in that State for 40 years.

Beginning with the 12th, warmer weather set in over the entire district, and temperatures of 90° and over occurred in the southern sections on the 15th and 16th. This warm period continued without interruption of consequence over the western and central portions until the end of the month; but in the east the temperatures were nearly normal or slightly above, and no extreme warmth was experienced except on the 30th, when maximum readings of from 92° to 95° were reported from most stations.

During the last week of the month, maximums above 95° were of almost daily occurrence over Illinois, Indiana, Ohio, and southern Lower Michigan, and records for high June temperatures were broken at many points in this area. Adrian, Mich., recorded the highest temperature, 103°, on the 16th, and in Ohio the highest readings were reported from Antwerp and Findlay, 102° on the 30th, while 100° or over occurred on the same day at six other stations. In Indiana the reading of 101° at Berne, on the 30th, was the highest, while at Chicago, Ill., the maximum of 99° on the 30th exceeded all previous June records for the past 43 years. On the 28th, while high temperatures prevailed generally throughout the district, Duluth, Minn., experienced one of the coldest June days in years. The average temperature was 48°, the maximum during the day being only 52°, and artificial heat was needed in buildings.

For the month as a whole the temperature averaged generally above the normal over all that portion of the district lying west and northwest of central Ohio, while to the eastward a deficiency prevailed, gradually increasing to a maximum of -4.2° at Enosburg Falls, Vt. The largest positive departures occurred in the interior of the Upper Michigan Peninsula, where they exceeded 5.0°.

## PRECIPITATION.

The precipitation of the month may be roughly considered as falling in three periods, from the first to the 7th, from the 14th to the 21st, and from the 24th to the 30th, there being practically no rain in any portion of the

district during the second week. The daily amounts were not large and heavy, and widespread rains were infrequent. With the exception of a few stations in the north-central portion, the total precipitation for the month was considerably below the normal. In Indiana and Ohio the month was one of the driest Junes on record and at no station did the total amount exceed that usually received. In the former State, at Howe and Hammond, there was no rain of consequence during the first and second decades, the total amounts up to that time being trace and 0.05 inch, respectively. At Lima, Ohio, but 0.36 inch of rain fell and at 6 other points the monthly fall was under 1 inch.

#### STORMS.

On the 16th a severe thunderstorm passed over northwestern Ohio, many buildings in that section being struck by lightning and badly damaged, while telephone and interurban service was seriously crippled.

On the 19th high winds occurred at both Detroit, Mich., and Cleveland, Ohio, in connection with heavy thunderstorms, reaching maximum velocities of 64 and 69 miles, respectively. Much damage was done to shade trees, signs, and buildings in both cities. Destructive storms were again reported over western Michigan on the 25th and over northern Ohio on the 25th and 30th.

Unusually severe thunderstorms occurred at Alpena, Mich., on the 26th and 27th. During the storm of the 26th the wind reached a velocity of 46 miles from the southwest, while at Middle Island, a short distance from Alpena, 64 miles an hour was recorded. The storm on

the afternoon of the 27th was more severe, and it is estimated that damage to the extent of over \$15,000 was done, many barns with their contents being entirely destroyed. Telephone service was demoralized as a result of these storms.

#### MISCELLANEOUS.

Hail, causing much damage to crops, was reported from various points in Clinton, Genesee, Oceana, and Muskegon Counties, Mich., on the 19th.

A well-defined mirage was observed over Lake Superior northeastward of Duluth on the 9th, and mirages were noticed at Alpena, Mich., on the 7th, 8th, 9th, 10th, and 23d. In each of the above cases, objects ordinarily invisible were distinctly seen apparently considerably above the horizon.

#### JUNE LAKE LEVELS.

The following data are from the report of the United States Lake Survey:

	Lake Superior.	Lakes Michigan and Huron.	Lake Erie.	Lake Ontario.
	Feet. 602.31	Feet. 581.20	Feet. 573.83	Feet. 248.02
Above tidewater at New York.....				
Above or below:				
Stage of May, 1913.....	+0.18	+0.15	-0.15	+0.05
Stage of June, 1912.....	+0.11	+0.74	+1.17	+0.68
Mean stage of June last 10 years.....	-0.05	+0.19	+0.90	+1.04
Highest recorded stage.....	-1.12	-2.40	-0.69	-0.61
Lowest recorded stage.....	+1.07	+1.30	+2.26	+3.13
Probable change during July.....	+0.20	+0.10	-0.10	0.00

TABLE 1.—Climatological data for June, 1913. District No. 4, Lake Region.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.					Sky.	Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmetted.	Number of rainy days, 0.01 inch or more.	Number of clear days.			
<i>Minnesota.</i>																			
Cloquet.....	Carlton.....	800	2	60.9	-	94	29	27	9	46	3.53	-	1.07	0	9	16	8	se.	
Duluth.....	St. Louis.....	1,133	42	59.3	+ 1.6	88	15	37	7	37	2.03	- 2.50	0.74	0	12	15	9	ne.	
Floodwood.....	do.....	1,257	6															M. H. Schussler.	
Grand Marais.....	Cook.....	54.1																T. J. Joynes.	
Stephens Mine.....	St. Louis.....	62.4	6	92	29†	27	8	46			2.68	-	0.95	0	7	23	5	n.	
Two Harbors.....	Lake.....	57.2	19	+ 0.1	93	15†	29	9	53		1.81	- 2.03	0.60	0	6	1	21	ne.	
Virginia.....	St. Louis.....	64.0	19	+ 2.8	94	29	31	7	39		2.80	- 1.23	1.05	0	8	24	5	sw.	
<i>Wisconsin.</i>																			
Appleton.....	Outagamie.....	795	12	70.6	+ 4.8	98	27	34	8	36	2.04	- 1.08	1.15	0	9	20	8	se.	
Ashland.....	Ashland.....	615	22	62.6	+ 1.2	95	29	28	9	45	3.22	+ 0.04	1.83	0	8	24	3	w.	
Bayfield.....	Bayfield.....	635	4	62.7	+ 1.6	90	29	34	8	30	4.65	+ 1.61	1.87	0	9	15	8	ne.	
Cecil.....	Shawano.....	804	15	66.6	+ 1.4	95	29	30	8†	40	2.84	0.00	1.38	0	6	20	9	sw.	
Cornucopia.....	Bayfield.....	640	1	58.7		84	15	33	8†	38	3.55		1.23	0	8	14	12	ne.	
Crandon.....	Forest.....	1,060	18	65.2	+ 2.0	92	29	28	8	35	2.19	- 0.24	0.85	0	7	22	5	sw.	
Florence.....	Florence.....	1,203	22	65.8*	+ 3.7	95 <sup>b</sup>	29	28 <sup>b</sup>	9	41 <sup>b</sup>	2.69	- 0.60	1.33	0	5	23	5	s.	
Fond du Lac.....	Fond du Lac.....	800	27	68.9	+ 2.8	98	29	32	9	41	3.63	+ 0.31	1.24	0	8	20	2	sw.	
Grand River Locks.....	Marquette.....	770	17	69.3		98	28	34	10	40	3.64	+ 0.51	1.50	0	7	26	2	s.	
Green Bay.....	Brown.....	617	27	67.0	+ 1.9	94	29	37	8	28	2.70	- 0.88	1.38	0	7	10	13	sw.	
High Falls.....	Marinette.....	1,125	1	66.7		95	29†	34	8†	45	1.96		0.71	0	9	23	3	se.	
Iron River.....	Bayfield.....	1,096	4	64.8		97	29	31	8†	42	3.48		1.00	0	8	23	5	s.	
Kewaunee.....	Kewaunee.....	590	4	61.2		92	27	36	8†	39	3.21		1.32	0	7	22	5	s.	
Manitowoc.....	Manitowoc.....	616	62	62.6	+ 0.2	94	27†	35	10†	47	2.26	- 1.14	1.54	0	8	12	14	sw.	
Menasha.....	Winnebago.....	764	16								1.82	- 1.33	1.39	0	7	24	3	sw.	
Menomonee Falls.....	Waukesha.....	842	4	67.8		97	29	32	8	38	4.11		1.32	0	7	20	9	sw.	
Milwaukee.....	Milwaukee.....	681	43	66.8	+ 3.3	95	30	39	8	40	2.43	- 1.24	1.09	0	9	18	8	sw.	
New London.....	Outagamie.....	762	17	68.6	+ 2.8	97	27	35	8	39	3.38	- 0.29	2.15	0	6	16	10	sw.	
Oconto.....	Oconto.....	590	22	66.6	+ 1.9	95	27†	33	8†	45	2.66	- 0.47	1.05	0	7	22	5	w.	
Oshkosh.....	Winnebago.....	744	24	68.0	+ 1.6	96	29	32	8	34	1.46	- 2.69	0.79	0	5	24	5	sw.	
Pine River.....	Waushara.....	900	18	68.3	+ 2.8	95	29†	33	8	37	3.34	- 0.27	1.03	0	11	11	18	sw.	
Plum Island.....	Door.....	588	5	61.5		87	16	35	9	31	2.06		0.82	0	5	17	2	s.	
Plymouth.....	Sheboygan.....	843	3	66.2		94	29†	35	8	30	2.17		1.03	0	9	20	7	sw.	
Port Washington.....	Ozaukee.....	713	20	65.6	+ 2.6	97	27	45	10†	33	4.79	+ 2.11	3.25	0	6	19	8	ne.	
Racine.....	Racine.....	633	16	68.4	+ 3.6	100	27†	40	10	37	2.21	- 0.61	0.65	0	9	23	4	sw.	
Ripon.....	Fond du Lac.....	1,031	3	69.4		97	28	36	8	33	2.26		0.82	0	7	19	6	sw.	
Sheboygan.....	Sheboygan.....	831	14	65.8	+ 2.3	102	27	40	8	39	2.44	- 0.45	0.85	0	8	17	9	se.	
Sturgeon Bay.....	Door.....	600	14	61.0	+ 0.6	96	30	29	9	39	5.19		3.07	0	8	17	11	s.	
Superior.....	Douglas.....	701	4	59.0		97	30	32	8†	47	2.06		0.60	0	12	17	9	ne.	
Waupaca.....	Waupaca.....	857	18	68.2	+ 2.5	100	29	31	8	56	3.89	- 0.13	2.90	0	10	18	5	sw.	
<i>Illinois.</i>																			
Chicago.....	Cook.....	823	43	70.5	+ 4.2	99	30	44	7	41	1.08	- 2.58	0.62	0	6	17	8	sw.	
<i>Indiana.</i>																			
Auburn.....	Dekalb.....	874	17	68.8	+ 1.5	99	30	33	10	39	0.53	- 3.09	0.33	0	3	23	4	sw.	
Berne.....	Adams.....	849	4	71.2		101	30	37	9	40	1.00		0.30	0	9	17	11	sw.	
Fort Wayne.....	Allen.....	856	17	70.7	+ 2.2	98	30	39	8	31	0.69	- 3.15	0.21	0	7	25	3	sw.	
Hammond.....	Lake.....	598	22	70.9	+ 2.7	99	29†	38	10	48	1.10	- 2.00	0.80	0	2	19	9	sw.	
Notre Dame.....	Lagrange.....	886	8	70.2		99	30	32	9	43	0.99		0.68	0	4	24	0	w.	
Whiting.....	St. Joseph.....	712	2	70.4		97	30	39	10	32	0.79		0.57	0	5	18	11	sw.	
<i>Michigan—Upper Peninsula.</i>																		D. H. Boyd.	
Baraga.....	Baraga.....	623	11															D., S. S., & A. Ry.	
Bergland.....	Ontonagon.....	1,300	3	64.9	+ 2.4	95	30	28	8†	45	4.22	- 0.45	1.55	0	6	18	6	ne.	
Calumet.....	Houghton.....	1,246	25	62.0	+ 2.4	90	29	35	7	27	2.67	- 0.45	1.19	0	6	23	4	w.	
Chatham.....	Alger.....	875	13	59.8	+ 2.3	93	30	33	8	46	2.80	- 0.18	1.25	0	5	13	5	sw.	
Deer Park.....	Luce.....	610	12	62.6	+ 7.0	97	30	36	8	37	2.80	+ 0.77	1.99	0	2	18	5	sw.	
Eagle Harbor.....	Keweenaw.....	622	12	57.2	+ 1.7	85	30	32	7	37	2.20	- 0.61	0.60	0	7	20	0	sw.	
Escanaba.....	Delta.....	612	40	61.5	+ 0.9	87	16	36	9	32	2.51	- 1.09	0.72	0	9	16	9	sw.	
Ewen.....	Ontonagon.....	1,147	14	63.6	+ 2.7	93	29	28	8†	41	5.25	+ 3.14	1.37	0	8	17	3	sw.	
Grand Marais.....	Alger.....	610	12	58.5	+ 3.0	92	30	36	3†	32	3.04	+ 0.49	1.50	0	9	24	3	s.	
Houghton.....	Houghton.....	668	12	61.7	+ 2.2	91	29	34	9	33	2.54	+ 0.95	0.97	0	10	16	9	w.	
Humboldt.....	Marquette.....	1,536	16	64.8	+ 6.9	96	29†	26	8†	46	3.66	+ 1.00	1.10	0	7	23	0	sw.	
Iron Mountain.....	Dickinson.....	1,111	12	67.0	+ 5.4	95	29	30	7	40	2.37	- 0.16	0.87	0	8	17	11	sw.	
Iron River.....	Iron.....	1,504	16															Victor D. Laing.	
Ironwood.....	Gogebic.....	1,520	10	65.2	+ 4.4	96	28	31	8	38	3.92	+ 0.97	1.94	0	6	25	4	sw.	
Ishpeming.....	Marquette.....	1,536	13	63.6*	+ 4.4	95 <sup>a</sup>	29	29 <sup>a</sup>	8	38 <sup>a</sup>	3.65	+ 1.07	1.08	T.	10	16	10	w.	
Isle Royale.....	Keweenaw.....	610	6															J. A. Malone.	
Mackinac Island.....	Mackinac.....	831	12	59.0	+ 1.0	84	29†	36	7	27	3.38	+ 0.63	1.90	0	7	7	8	sw.	
Maple Ridge.....	Delta.....	7	61.6					39	30	9	41	5.17		1.75	0	6	24	1	s.
Marquette.....	Marquette.....	734	61	64.4	+ 2.9	95	29	35	8	39	2.76	- 0.75	1.02	0	9	17	5	sw.	
Menominee.....	Menominee.....	581	14	65.6	+ 3.9	94	30	37	8	33	2.93	- 0.12	0.87	0	6	23	4	sw.	
Munising.....	Alger.....	631	16	61.4	+ 3.3	94	30	29	8†	38	2.51	+ 0.29	0.86	0	11	16	8	s.	
Newberry.....	Luce.....	773	11	62.3	+ 4.3	90	30	33	4†	35	1.77	- 0.70	0.83	0	9	13	11	s.	
Powers.....	Menominee.....	868	13															Chicago & North West'n Ry.	
St. Ignace.....	Mackinac.....	593	23															D., S. S., & A. Ry.	
Sault Ste. Marie.....	Chippewa.....	614	25	58															

TABLE 1.—Climatological data for June, 1913. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.								Precipitation, in inches.								Sky.	Prevailing wind direction.	Observers.			
				Mean.	Departure from the normal.			Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.					
					Highest.	Date.	Lowest.																		
<i>Michigan—Lower Peninsula—Contd.</i>																									
Arbela.	Tuscola.	728	17	67.6	+ 1.9	98	30	30	9	38	2.33	- 0.78	0.91	0	6	7	18	5	sw.	Wm. Atkin.					
Arnada.	Macomb.	24	65.0	- 0.8	92	16	33	10	35	2.69	- 0.56	1.19	0	6	16	14	0	sw.	R. O. Gould.						
Battle Creek.	Calhoun.	822	29	69.6	+ 1.1	100	30	36	9†	41	0.50	- 0.80	0.20	0	3	24	3	3	sw.	Elmer E. Sager.					
Bay City.	Bay.	593	17	72.2	+ 6.1	98	29	49	10	42	2.26	- 0.31	0.90	0	4	20	7	3	ne.	Pere Marquette R. R.					
Benzonia.	Benzie.	832	16	64.4	+ 1.9	92	30	33	10	37	2.56	+ 0.26	0.67	0	7	19	9	2	sw.	Wallace Nutting.					
Big Rapids.	Mecosta.	906	17	68.8	+ 4.9	95	16	35	8†	40	3.07	+ 0.54	0.90	0	8	13	14	3	w.	Superintendent Waterworks.					
Blissfield.	Lenawee.	687	1	69.2	.....	99	16	36	9	36	1.12	.....	0.69	0	3	10	15	5	sw.	Harry Watson.					
Bloomingdale.	Van Buren.	9	70.0	.....	90	29†	37	9	43	0.46	.....	0.21	0	4	26	3	1	sw.	John M. Haven.						
Cadillac.	Wexford.	1,293	4	66.3	.....	91	27†	33	8	33	2.00	.....	0.75	0	5	24	4	2	w.	Cadillac Water & Light Co.					
Cassopolis.	Cass.	903	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Michigan Central R. R.				
Charlevoix.	Charlevoix.	610	35	61.8	- 0.3	92	30	32	10	38	3.00	+ 0.65	0.82	0	4	21	8	1	nw.	Pere Marquette R. R.					
Charlotte.	Eaton.	9	68.8	.....	97	30	33	10	40	2.14	.....	0.97	0	5	14	15	1	sw.	City of Charlotte.						
Cheboygan.	Cheboygan.	611	23	62.4	+ 0.7	94	30	35	4†	40	3.10	+ 0.40	1.00	0	3	23	6	1	sw.	E. A. Bouchard.					
Clinton.	Lenawee.	830	23	70.2	+ 2.1	100	30	31	9	45	0.94	- 2.08	0.51	0	1	25	4	1	sw.	David Woodward.					
Coldwater.	Branch.	984	16	70.7	+ 4.7	99	30	35	9†	39	1.40	- 2.92	1.40	0	7	10	19	1	sw.	L. S. & M. S. R. R.					
Croton.	Newaygo.	685	5	67.8	.....	95	29	34	10	39	2.68	.....	1.38	0	8	17	9	4	ne.	Gr. Rap. Musk. Power Co.					
Detroit.	Wayne.	730	42	69.0	+ 1.2	95	16	8	31	1.42	- 2.47	0.84	0	8	17	9	4	ne.	U. S. Weather Bureau.						
Durand.	Shiawassee.	799	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Chief Train Dispatcher.				
East Tawas.	Ioseo.	590	16	64.6	+ 2.6	93	30	31	8	38	1.84	- 0.44	0.50	0	4	23	6	1	w.	Detroit & Mackinaw Ry.					
Eloise.	Wayne.	640	16	62.2	+ 2.3	97	30	34	10	36	2.49	- 2.35	0.11	0	6	17	12	1	sw.	John Gilmore.					
Five Channels.	Iosco.	0	65.2	.....	98	30†	33	8	44	2.14	.....	0.97	0	9	21	4	5	sw.	Au Sable Electric Co.						
Flint.	Genesee.	730	24	66.8	+ 1.1	97	30	35	9	35	2.03	- 0.84	0.75	0	6	20	0	10	s.	William L. Fisher.					
Frankfort.	Benzie.	589	9	59.2	.....	78	24†	38	9†	20	2.36	.....	0.60	0	7	27	2	1	sw.	Geo. Morency.					
Ganges.	Allegan.	665	4	67.4	.....	92	30	37	8	27	1.35	.....	0.87	0	7	22	4	4	sw.	H. H. Hutchins.					
Gaylord.	Otsego.	1,367	13	68.1	+ 4.8	93	30	36	9	36	2.30	- 0.20	0.84	0	6	18	6	0	sw.	Michigan Central R. R.					
Gladwin.	Gladwin.	794	17	68.0	+ 2.6	98	30	33	8	47	3.10	+ 0.46	1.40	0	8	19	5	6	w.	Geo. R. Smith.					
Grand Haven.	Ottawa.	628	42	65.2	+ 0.5	90	29	36	8	29	1.56	- 0.95	0.72	0	6	19	8	3	sw.	U. S. Weather Bureau.					
Grand Rapids.	Kent.	707	24	69.8	+ 1.7	97	29	39	8	35	1.50	- 1.02	0.54	0	7	21	7	2	sw.	Do.					
Grape.	Monroe.	625	23	68.0	+ 0.9	96	16†	35	10	38	2.12	- 0.85	0.94	0	5	22	4	4	sw.	Joseph W. Morris.					
Grass Lake.	Jackson.	989	7	69.6	.....	101	30	34	9	43	0.88	.....	0.38	0	4	22	4	4	w.	Menzo Conklin.					
Grayling.	Crawford.	1,147	21	65.3	+ 1.2	95	30	32	8	46	2.03	+ 0.20	0.53	0	8	19	6	5	w.	S. N. Insley.					
Greenville.	Montcalm.	802	1	69.4	.....	97	19	36†	8†	50	.....	.....	.....	0	1	21	0	6	sw.	Pere Marquette R. R.					
Habor Beach.	Huron.	635	25	64.6	+ 2.4	99	30	38	10	43	2.39	- 0.27	1.40	0	6	22	5	3	s.	Do.					
Harrison.	Clare.	1,159	20	67.2	+ 3.2	98	30	35	9	39	1.96	- 0.79	0.81	0	5	23	5	2	sw.	D. W. Mitchell.					
Harrisville.	Alcona.	616	29	62.4	+ 1.5	99	16	35	9	41	1.92	- 1.08	0.65	0	9	17	8	5	sw.	Pere Marquette R. R.					
Hart.	Oceana.	698	21	67.2	+ 1.7	97	29	34	8†	38	1.38	- 0.83	0.60	0	5	22	4	4	sw.	C. F. Leipprandt.					
Hayes.	Huron.	620	23	67.6	+ 1.6	98	30	34	10	39	1.15	- 1.23	0.35	0	5	16	7	7	sw.	A. D. De Garmo.					
Highland.	Oakland.	1,006	21	.....	.....	.....	.....	.....	.....	.....	1.42	- 1.97	0.67	0	5	21	0	6	sw.	C. L. Herron.					
Hillsdale.	Hillsdale.	1,150	16	69.0	+ 3.1	98	30	31	9	38	0.78	- 3.31	0.62	0	2	26	3	1	sw.	City of Holland.					
Holland.	Ottawa.	610	7	67.7	.....	95	30	34	9	38	1.77	.....	1.03	0	8	21	8	1	sw.	James Ostrander.					
Houghton Lake.	Roscommon.	0	65.8b	.....	94b	27	36b	9	43b	1.50	.....	0.42	0	5	20b	3b	1	sw.	Frank Sharp.						
Howell.	Livingston.	924	21	69.3	+ 2.5	97	30	35	9	33	1.56	- 1.22	0.68	0	4	23	4	3	sw.	O. L. Giddings.					
Ivan.	Kalkaska.	24	65.1	+ 0.7	92	30	30	8	42	2.93	+ 0.21	1.00	0	8	14	16	0	sw.	City of Jackson.						
Jackson.	Jackson.	927	16	70.8	+ 2.7	100	30	35	9	39	0.34	- 2.23	0.14	0	4	28	2	0	ne.	William Bice.					
Jeddo.	St. Clair.	667	24	66.0	+ 0.8	95	16	35	9†	37	2.55	- 0.14	1.11	0	6	19	7	4	ne.	Axel Becker.					
Johannesburg.	Osceola.	0	64.4	.....	93	30	31	8	40	2.15	.....	0.70	0	8	13	15	2	sw.	Kalamazoo Asylum.						
Kalamazoo.	Kalamazoo.	955	37	69.4	+ 1.4	95	30	35	9†	41	0.90	- 3.18	0.80	0	2	21	7	2	w.	U. S. Weather Bureau.					
Lansing (Agr. College).	Ingham.	863	49	67.6	+ 0.4	98	30	34	9	38	1.01	- 2.39	0.53	0	6	18	6	6	sw.	State Board of Health.					
Lansing (capital).	do.	881	26	69.0	+ 1.9	99	30	35	9	36	0.82	- 2.93	0.46	0	4	20	5	5	sw.	Michigan Home.					
Lapeer.	Lapeer.	827	14	66.6	+ 1.4	98	30	37	8	40	2.47	- 0.43	1.19	0	5	12	17	1	sw.	U. S. Weather Bureau.					
Ludington.	Mason.	637	15	61.5	+ 0.1	86	16	34	8	31	2.93	+ 0.47	1.15	0	8	17	9	4	s.	John W. Nicholson.					
Luther.	Lake.	1,028	3	65.6	.....	96	29	31	9†	44	2.32	.....	1.00	0	7	21	7	3	w.	Grand Rapids & Indiana Ry. Do.					
Mackinaw.	Cheboygan.	592	22	.....	.....	.....	.....	.....	.....	.....	2.49	- 0.02	1.00	0	5	21	2	7	se.	Postmaster.					
Mancetona.	Antrim.	1,121	17	64.8a	+ 2.0	95a	30	28a	8	43a	2.00	- 0.42	0.66	1.51	0	5	22a	0	5	w.	E. B. Stuart.				
Manistee.	Manistee.	600	16	63.8	+ 1.3	90	30	39	8†	31	2.29	- 0.66	1.51	0	2	22	1	2	sw.	Pere Marquette R. R.					
Marshall.	Calhoun.	896	1	70.0*	.....	94	16†	38	9†	40*	.....	.....	.....	0	2	22	1	2	sw.	George J. Tripp.					
Midland.	Midland.	604	14	68.4	+ 2.7	99	16	34	7	48	2.00	- 0.21	0.80	0	3	24	4	2	sw.	Waterworks.					
Morenci.	Lenawee.	811	6	69.1	.....	98	16†	36	9†	42	3.34	- 0.21	1.63	0	6	21	3	6	sw.	Pere Marquette R. R.					
Mount Clemens.	Macomb.	615	13	67.6	+ 1.1	99	16	35	10	40	1.42	- 1.44	0.65	0	3	14	10	6	s.	Grand Rapids & Indiana Ry.					
Mount Pleasant.	Isabella.	826	14	65.6	- 0.3	99	30	32	9†	47	1.94	- 0.47	0.86	0	3	17	11	2	sw.	E. O. Ladd.					
Muskegon.	Muskegon.	587	17	68.0	+ 3.0	99	30	39	8	45	1.85	- 0.67	0.65	0	6	24	4	2	w.	G. A. Knapp.					
Old Mission.	Grand Traverse.	858	19	63.7b	+ 0.3	92	30	31	9†	41	1.09	- 1.61	0.33	0	4	18	11	1	w.	Detroit & Mackinaw Ry. Do.					

TABLE 1.—Climatological data for June, 1913. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.				Precipitation, in inches.				Sky.	Prevailing wind direction.	Observers.					
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	
<i>Ohio—Continued.</i>																			
Findlay.....	Hancock.....	776	24	69.8	-0.1	102	30	36	9†	43	1.60	-2.41	0.86	0	5	28	1	1	sw.
Fremont.....	Sandusky.....	628	11	69.3	+1.1	98	30	40	10†	40	3.72	-0.99	1.69	0	7	23	5	2	.....
Hedges.....	Paulding.....	725	19	70.9	+2.6	100	28†	34*	9	42*	1.60	-2.04	0.67	0	6	24	5	1	sw.
Hillhouse.....	Lake.....	997	20	65.6	+0.6	91	30	31	10	35	2.10	-1.46	0.75	0	6	24	2	4	w.
Hiram.....	Portage.....	1,260	33	67.4	+0.4	94	30	38	9†	32	1.17	-2.80	0.70	0	3	20	9	1	nw.
Hudson.....	Summit.....	1,123	52	68.8	+1.3	98	30	34	10	40	0.95	-2.79	0.44	0	4	25	4	1	n.
Lima.....	Allen.....	875	14	70.2	+2.4	101	30	9	39	30	0.36	-3.87	0.20	0	3	20	8	2	ne.
Medina.....	Medina.....	944	25	67.4	-0.2	98	30	31	10	44	0.62	-2.62	0.34	0	4	25	3	2	nw.
Montpelier.....	Williams.....	880	21	70.6	+2.7	101	30	36	10	40	0.58	-3.25	0.28	0	4	24	4	2	w.
Napoleon.....	Henry.....	680	26	69.6	+1.1	99	30	39	8	40	1.51	-2.27	0.90	0	6	23	0	7	w.
New Bremen.....	Auglaize.....	1,035	20	70.1	+0.7	98	30	37	9	36	1.64	-1.72	0.99	0	6	20	8	2	sw.
North Royalton.....	Cuyahoga.....	1,000	26	67.4	+0.1	96	30	37	5†	37	1.22	-2.18	0.85	0	3	25	4	1	w.
Norwalk.....	Huron.....	719	27	68.8	+0.6	101	30	35	10	43	1.29	-2.17	0.62	0	8	11	15	4	w.
Oberlin.....	Lorain.....	855	38	67.2	-0.6	100	30	34	10	44	0.59	-3.13	0.23	0	7	22	5	3	ne.
Ottawa.....	Putman.....	720	20	69.5	+0.2	98	30	38	9†	38	0.96	-2.53	0.39	0	4	14	15	1	sw.
Sandusky.....	Erie.....	629	36	69.5	+0.7	97	30	46	10	32	1.54	-2.28	0.33	0	11	16	8	6	ne.
Tiffin.....	Seneca.....	775	31	68.5	-0.8	92	30	39	10	30	1.94	-2.06	0.54	0	11	19	10	1	n.
Toledo.....	Lucas.....	769	42	69.9	+0.5	97	30	39	8	31	2.12	-1.26	0.70	0	11	20	8	2	sw.
Upper Sandusky.....	Wyandot.....	854	30	69.4	-0.1	98	30	36	10	39	2.68	-1.52	1.60	0	6	18	10	2	w.
Vickery.....	Sandusky.....	588	20	67.7	-0.5	99	30	36	10	41	3.05	-0.52	1.09	0	10	16	11	3	ne.
Wapakoneta.....	Auglaize.....	598	1	71.2	-0.1	100	30	9	38	1.55	-0.59	0.59	0	8	20	9	1	sw.	
Wauseon.....	Fulton.....	780	41	69.0	+0.4	97	17	30	9†	41	1.89	-2.10	1.40	0	6	17	12	1	s.
Wickliffe.....	Lake.....	740	1	.....	.....	.....	.....	.....	1.35	.....	0.55	0	7	23	6	1	.....	.....	
<i>Pennsylvania.</i>																			
Erie.....	Erie.....	658	40	65.9	-1.1	90	30	42	9	28	2.79	-0.96	0.98	0	9	17	11	2	w.
<i>New York.</i>																			
Adams Center.....	Jefferson.....	540	22	65.0	-0.5	92	26	32	9	34	1.49	-2.37	0.92	0	5	25	4	1	sw.
Angelica.....	Allegany.....	1,340	30	61.0	-2.9	89	30	26	9	47	4.38	+0.16	2.64	0	7	6	15	9	w.
Appleton.....	Niagara.....	270	22	63.8	-0.8	92	16	38	10	35	2.16	-0.90	1.56	0	3	23	5	2	sw.
Auburn.....	Cayuga.....	715	44	64.3	-1.5	90	16	35	9	36	2.94	-1.16	0.88	0	6	22	6	2	nw.
Avon.....	Livingston.....	585	18	65.8	-0.5	95	28†	37	9	40	3.72	+0.50	1.85	0	5	19	7	4	.....
Brockport.....	Monroe.....	537	17	65.2	-0.9	90	25†	36	9	34	2.95	-0.12	1.17	0	8	22	6	2	sw.
Buffalo.....	Erie.....	767	62	63.4	-1.7	83	24	41	8	21	1.69	-1.45	0.56	0	10	12	15	3	sw.
Canisius College.....	do.....	.....	60	62.6	.....	86	25	38	8	29	2.28	0.71	0	10	12	15	3	.....	
Canton.....	St. Lawrence.....	448	19	62.0	-3.1	87	27	35	9	40	1.15	-2.28	0.55	0	8	14	6	2	sw.
Cape Vincent.....	Jefferson.....	246	8	62.7	.....	89	25	41	10	32	0.66	0	4	21	7	2	n.	.....	
Chazy.....	Clinton.....	151	13	64.1	-0.3	88	16	35	10	38	1.21	-2.03	0.60	0	3	20	10	0	n.
Chestnut Lawn.....	Wyoming.....	1,069	1	64.3	-0.3	91	30	33	9	36	4.00	0	0.96	0	11	19	9	2	.....
Dannemora.....	Clinton.....	1,490	8	65.2	.....	86	16	38	8†	40	2.01	0	0.75	0	6	12	9	9	w.
Elba.....	Genesee.....	500	14	62.9	-1.7	88	25†	35	9	35	3.65	-1.38	0.50	0	5	22	6	2	sw.
Fayetteville.....	Onondaga.....	530	13	65.4	-0.9	91	30	32	9	38	3.25	-1.44	1.15	0	11	21	8	1	sw.
Gabriels.....	Franklin.....	1,729	11	59.0	.....	88	25	30	9	49	2.38	0	0.93	0	6	18	9	3	w.
Gemeva.....	Ontario.....	0	66.8	.....	92	30	37	9	37	3.24	0	1.27	0	0	7	2	.....	.....	
Harkness.....	Clinton.....	622	11	63.2	-0.2	88	16†	36	9	35	1.45	-1.84	0.47	0	9	28	2	0	s.
Hemlock Lake.....	Livingston.....	900	15	64.7	-1.3	88	30	38	9	32	4.80	+1.50	2.90	0	6	26	2	2	s.
Hunt.....	do.....	1,321	14	64.4	-2.1	92	16	34	9	41	3.76	-0.09	1.25	0	9	19	9	2	sw.
Ithaca.....	Tompkins.....	928	35	65.0	-1.2	94	30	32	9	41	2.00	-1.88	0.65	0	8	19	6	5	nw.
Keene Valley.....	Essex.....	1,000	15	63.4	+0.7	94	30	30	8	60	1.43	-2.32	0.35	0	10	19	8	3	sw.
King Ferry.....	Cayuga.....	13	.....	.....	.....	.....	.....	.....	1.67	0	2.20	0.66	0	6	20	6	4	sw.	
Lake George.....	Warren.....	350	16	65.1	+0.7	92	27†	33	9	43	1.38	-2.81	0.41	0	7	16	12	2	s.
Lake Placid Club.....	Essex.....	1,864	5	53.8	.....	82	30	27	10	45	2.22	0	0.98	0	7	20	9	1	sw.
Lauterbrunn.....	Wyoming.....	.....	1	64.6	.....	92	30	33	9†	37	4.20	0	0.96	0	11	13	9	3	sw.
Lockport.....	Niagara.....	520	26	64.0	-2.2	87	16†	37	9	32	3.16	+0.65	1.88	0	5	21	7	2	sw.
Lovellville.....	Lewis.....	900	46	65.8	+2.8	95	15	32	10	49	1.52	-2.08	0.40	0	10	13	17	0	w.
Moira.....	Franklin.....	200	13	62.4	-2.0	89	30	30	9	48	1.72	-2.13	0.54	0	6	11	15	4	w.
Nehasane.....	Hamilton.....	1,750	5	58.4	.....	88	25	26	9	48	1.43	0	0.63	0	9	17	13	0	nw.
North Lake.....	Herkimer.....	1,822	12	59.4	.....	89	25	28	10	44	2.42	0	0.54	0	7	23	4	3	w.
Ogdensburg.....	St. Lawrence.....	175	29	63.5	-1.5	87	27	38	9	35	0.81	-2.74	0.56	0	3	14	15	1	s.
Old Forge.....	Herkimer.....	1,722	5	58.4	.....	89	25	25	9	46	1.89	0	0.47	0	11	18	5	2	sw.
Oswego.....	Oswego.....	335	43	62.0	-1.8	89	30	44	9	33	1.91	-1.52	0.69	0	9	15	9	6	sw.
Palermo.....	Cattaraugus.....	1,410	9	.....	.....	.....	.....	.....	1.50	0	1.76	0.49	0	9	16	10	4	w.	
Perry City.....	Oswego.....	460	54	.....	.....	.....	.....	.....	1.32	0	1.72	0.91	0	8	18	5	7	n.	
Philadelphia.....	Schuyler.....	1,038	33	62.0	-2.9	93	30	26	9	45	2.35	-1.72	0.66	0	7	24	6	0	sw.
Potsdam.....	Jefferson.....	485	7	62.9	.....	90	26	32	9	38	1.41	0	0.46	0	8	10	18	2	w.
Ranger School.....	St. Lawrence.....	300	37	65.1	+0.8	90	25†	35	9	40	1.00	-2.72	0.57	0	6	.....	.....	.....	.....
Raquette Lake.....	Hamilton.....	1,776	5	59.6	.....	90	25	27	9	45	1.58	0	0.43	0	8	21	5	4	sw.
Rochester.....	Monroe.....	523	84	65.5	-0.6	91	30	40	10	31	2.11	-1.02	0.57	0	8	18	6	6	w.
Romulus.....	Seneca.....	719	21	.....	.....	.....	.....	.....	1.50	0	1.72	0.66	0	7	24	6	0	sw.	
Shortsville.....	Ontario.....</																		

TABLE 2.—*Daily precipitation for June, 1913. District No. 4, Lake Region.*

Stations.	Watershed.	Day of month.																														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.
<i>Minnesota.</i>																																
Cloquet.	Lake Superior.	T.	.02	1.07	T.																											3.53
Duluth.	do.	.09		.18	T.																										2.03	
Floodwood.	do.																															
Grand Marais.	do.	.20		.66																											2.38	
Stephens Mine.	do.	.15	.10	.95	.20																										2.68	
Two Harbors.	do.	.05		.11	.60																										1.81	
Virginia.	do.	.24	.05																												2.80	
<i>Wisconsin.</i>																																
Appleton.	Fox.	T.	.05	.04	.06																										2.04	
Ashland.	Lake Superior.	T.	.05	.10	1.73																										3.22	
Bayfield.	do.	.08	T.	.02	.36	.78																									4.65	
Cecil.	Fox.	T.	.04		T.	T.																									2.84	
Cornucopia.	Lake Superior.	.11	T.	.04	.29	1.23																									3.55	
Crandon.	Fox.	.05				.84																									2.19	
Florence.	Menomonee.					.45																									2.69	
Fond du Lac.	Fox.					.15	.05																								3.63	
Grand River Locks.	do.					.15	.25																								3.64	
Green Bay.	Lake Michigan.	.01		.02	.54																										2.70	
High Falls.	do.	.01			.05																										1.96	
Iron River.	Lake Superior.	T.	.13	.17	1.00																										3.48	
Kewaunee.	Lake Michigan.				.12	.12																									3.21	
Manitowoc.	do.				.06	.07																									2.26	
Menasha.	Fox.				.03	.13																									1.82	
Menomonee Falls.	Lake Michigan.				T.	.32																									4.11	
Milwaukee.	do.				.01	.39																									2.43	
New London.	Fox.					.15																									3.38	
Oconto.	Lake Michigan.	.02			.02																										2.66	
Oshkosh.	Fox.	T.	.04																												1.46	
Pine River.	do.	T.	.06	.32																											3.34	
Plum Island.	Lake Michigan.				T.																										2.06	
Plymouth.	do.	T.	.12	.14																											2.17	
Port Washington.	do.				T.	.14	.65																								4.79	
Racine.	do.				T.	.08	.09																								2.21	
Ripon.	Fox.				T.	.05	.47																								2.26	
Sheboygan.	Lake Michigan.				.42	.46																									2.44	
Sturgeon Bay.	do.				.01	.07	.13	.26																							5.19	
Superior   .	Lake Superior.																														2.06	
Waupaca.	Fox.																														3.89	
<i>Illinois.</i>																																
Chicago.	Lake Michigan.	T.			T.	T.	.01																								1.08	
Highland Park.	do.																														1.71	
<i>Indiana.</i>																																
Auburn    .	Munzee.	.33				.10																										0.53
Berne.	do.	.11				.10																									1.00	
Fort Wayne.	do.	.21				.02																									0.69	
Hammond.	Lake Michigan.	T.																													1.10	
Howe    .	St. Joseph.																														0.99	
Notre Dame.	do.	.01																													0.79	
Whiting.	Lake Michigan.																														1.10	
<i>Michigan—Upper Peninsula.</i>																																
Baraga.	Lake Superior.																															
Bergland.	Ontonagon.	.03	T.	.08	T.	.24																									4.22	
Calumet.	Lake Superior.	.02				.90																									2.67	
Chatham.	do.																														2.80	
Deer Park.	do.					T.																									2.80	
Eagle Harbor.	do.	.20			.30	10																								2.20		
Escanaba.	Lake Michigan.	.01	.01			.46	T.																								2.51	
Ewen.	Ontonagon.	.05	T.	.03		.37																								5.25		
Grand Marais.	Lake Superior.					.50																										
Ontonagon.	do.																														3.04	
Houghton.	do.	.01	.11		.07	.19																									2.70	
Humboldt.	Escanaba.					T.	.10																									
Iron Mountain.	do.																														2.37	
Iron River.	do.																														2.37	
Ironwood.	Lake Superior.																														3.92	
Ishpeming.	Lake Superior.																														3.92	
Isle Royale.	Escanaba.	T.	.01			.08	.01																							3.65		
Lake Superior.																																
Lake Huron.																																
Mackinac Island.	Lake Huron.	.01	T.																												3.38	
Maple Ridge.	Lake Michigan.																														5.17	
Marquette.	Lake Superior.	.01	T.	.09	.72	T.																									2.76	
Menominee.	do.																														3.22	
Munising.	Lake Superior.	.07	T.	.03		.86																								2.93		
Newberry.	Tequamenon.	.10	.02			.42																								2.51		
St. Ignace.	Lake Michigan.																														1.77	
Sault Ste. Marie.	Lake Huron.	T.	.01	.03		.10					</																					

TABLE 2.—*Daily precipitation for June, 1913. District No. 4—Continued.*

Stations.	Watershed.	Day of month.																																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.															
<i>Michigan—Lower Peninsula—Con.</i>																																															
Bay City.....	Saginaw.....																				.52	.90										2.26															
Benzonia.....	Betsey.....	T.	.14																		.63	.35										2.56															
Big Rapids.....	Muskegon.....		.20	.08																	.28	.76	.06									3.07															
Blissfield.....	Raisin.....																			.39		.04	.69									1.12															
Bloomingdale.....	Lake Michigan.....																			T.	.06		.09	.10								0.46															
Cadillac.....	Manistee.....																			.08			.57	.75								2.00															
Cassopolis.....	St. Joseph.....																																														
Charlevoix.....	Lake Michigan.....																																														
Charlotte.....	Kalamazoo.....																																														
Cheboygan.....	Cheboygan.....																																														
Clinton.....	Raisin.....																																														
Coldwater.....	St. Joseph.....																																														
Croton.....	Muskegon.....		.06	.15																																											
Detroit.....	Detroit.....	T.	.05																																												
Durand.....	Saginaw.....																																														
East Tawas.....	Lake Huron.....																																														
Eloise.....	Rouge.....																																														
Five Channels.....	Au Sable.....																																														
Flint.....	Saginaw.....		.08																																												
Frankfort.....	Betsey.....																																														
Ganges.....	Lake Michigan.....		.36																																												
Gaylord.....	Cheboygan.....		.31																																												
Grand Haven.....	Saginaw.....	T.	.08																																												
Grand Rapids.....	Grand.....																																														
Grape.....	Raisin.....	T.	.38																																												
Grass Lake.....	Grand.....																																														
Grayling.....	Au Sable.....	T.	.41																																												
Greenville.....	Grand.....																																														
Habor Beach.....	Lake Huron.....		.02	.22																																											
Harrison.....	Saginaw.....		.14																																												
Harrisville.....	Lake Huron.....	.02	.05																																												
Hayes.....	Pigeon.....																																														
Hilldale.....	Huron.....																																														
Holland.....	St. Joseph.....																																														
Houghton Lake.....	Lake Michigan.....		.07	.05																																											
Howell.....	Au Sable.....																																														
Ivan.....	Saginaw.....		.33	.68																																											
Jackson.....	Manistee.....	T.	.36																																												
Jeddo.....	St. Clair.....																																														
Johannesburg.....	Cheboygan.....	T.	.25																																												
Kalamazoo.....	Kalamazoo.....																																														
Lansing (Agricultural College).....	Grand.....		.12	.08																																											
Lansing (Capitol).....	do.....																																														
Lapeer.....	Saginaw.....																																														
Ludington.....	Pere Marq'te.....	T.	.16																																												
Luther.....	Manistee.....	T.	T.																																												
Mackinaw.....	Lake Huron.....		.17																																												
Mancelona.....	Lake Michigan.....	T.	.10																																												
Marshall.....	Manistee.....																																														
Midland.....	Kalamazoo.....																																														
Morenci.....	Saginaw.....																																														
Mount Clemens.....	Clinton.....																																														
Mount Pleasant.....	Saginaw.....		.29																																												
Muskegon.....	Old Mission.....																																														
Old Mission.....	Lake Michigan.....	.05	.47																																												
Olivet.....	Kalamazoo.....		.06																																												
Omer.....	Lake Huron.....																																														
Onaway.....	Cheboygan.....																																														
Owosso.....	Saginaw.....	T.	T.	.11																																											
Plymouth.....	Rouge.....																																														
Port Austin.....	Lake Huron.....																																														
Port Huron.....	St. Clair.....	.01																																													
Reed City.....	Muskegon.....		.75	.15																																											
Roscommon.....	Au Sable.....		.05	.01																																											
Saginaw E Side.....	Saginaw.....																																														

TABLE 2.—*Daily precipitation for June, 1913.* District No. 4—Continued.

Stations.	Watershed.	Day of month.																																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
<i>Ohio—Continued.</i>																																		
Hudson.....	Lake Erie.....	.06																																
Lima [1].....	Maumee.....	.20			T.	12															T.													
Medina.....	Lake Erie.....	.14			T.																T.													
Montpelier.....	Maumee.....	.04																																
Napoleon.....	do.....	.08				26																												
New Bremen.....	do.....	.31				15																												
North Royalton.....	Lake Erie.....	.20																																
Norwall [1].....	do.....	.03				08																												
Oberlin.....	do.....	T.				.06																												
Ottawa.....	Maumee.....	.25			T.																													
Sandusky.....	Lake Erie.....	T.				.02																												
Tiffin.....	Sandusky.....	.09				14																												
Toledo.....	Maumee.....	.40																																
Upper Sandusky.....	Sandusky.....	.28																																
Vickery.....	Lake Erie.....	.01	T.																															
Wapakoneta.....	Maumee.....	.45																																
Wauseon [1].....	do.....	.03																																
Wickliffe [1].....	Lake Erie.....	.08	.08																															
<i>Pennsylvania.</i>																																		
Erie.....	Lake Erie.....	.02																																
<i>New York.</i>																																		
Adams Center.....	Lake Ontario.....	.18	T.																															
Angelica.....	Genesee.....	.10	.15																															
Appleton.....	Lake Ontario.....	.02		T.																														
Auburn.....	Oswego.....	.88																																
Avon.....	Genesee.....	.48																																
Brockport.....	Lake Ontario.....	.41			T.																													
Buffalo.....	Lake Erie.....	.41																																
Canisius College.....	do.....	.32																																
Canton.....	Grass.....	.04																																
Cape Vincent.....	St. Lawrence.....																																	
Chazy.....	Champlain.....																																	
Chestnut Lawn.....	Genesee.....	.80	.23																															
Dannemora.....	Champlain.....																																	
Ebba.....	Lake Ontario.....	.48			T.																													
Fayetteville.....	Oswego.....	.03	.84																															
Gabriels.....	St. Regis.....	.29																																
Geneva.....	Oswego.....	1.27																																
Harkness.....	L. Champlain.....	.04																																
Hemlock Lake.....	Genesee.....	.46																																
Hunt.....	do.....	.06																																
Ithaca.....	Oswego.....	.11																																
Keene Valley.....	Ausable.....	.09	.18		T.																													
King Ferry.....	Oswego.....	.04	.12																															
Lake George.....	L. Champlain.....	.14	.11																															
Lake Placid Club.....	Ausable, W. B. T.	.39	.62																															
Lauterbrunnen.....	Genesee.....	.07																																
Lockport.....	Lake Ontario.....	.07																																
Lowville.....	Black.....	.18																																
Moira.....	St. Lawrence.....	.37	.04																															
Nehasane.....	Black.....	.06	.11																															
North Lake.....	do.....	.19	.45																															
Ogdensburg.....	St. Lawrence.....	.05	.35																															
Old Forge.....	Black.....	.10	.22																															
Oswego.....	Lake Ontario.....	.69																																
Otto.....	Lake Erie.....	.49																																
Palermo.....	Lake Ontario.....	.49																																
Perry City.....	Oswego.....	.11	.12																															
Philadelphia.....	St. Lawrence.....	.05	.35																															
Potsdam [1].....	Raquette.....	.10																																
Ranger School.....	Oswegatchie.....	.77																																
Raquette Lake.....	Raquette.....	.30																																
Rochester.....	Genesee.....	.72																																
Romulus.....	Oswego.....	.72																																
Scottsville.....	do.....	.47	.03																															
Shortsville.....	do.....	.47																																
Skaneateles.....	do.....	.77																																
Syracuse.....	do.....	.50																																
Tupper Lake.....	Raquette.....	.66																																
Volusia.....	Lake Erie.....	.43																																
Wanakena.....	Oswegatchie.....	.08																																
Watertown.....	Black.....	.02	.07																															
Wedgwood.....	Oswego.....	.11	.08																															

\* Precipitation included in that of the next measurement.  
† Separate dates of falls not recorded.

TABLE 3.—Maximum and minimum temperatures for June, 1913. District No. 4, Lake Region.

Date.	Duluth, Minn.		Wisconsin.				Chicago, Ill.		Fort Wayne, Ind.		Upper Michigan.						Lower Michigan.							
			Florence.		Green Bay.		Milwau- kee.				Escanaba.		Ewen.		Houghton.		Mar- quette.		Sault Ste. Marie.		Alpena.		Battle Creek.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	71	51	72	57	73	52	83	55	84	56	79	64	75	51	72	42	66	46	70	47	65	40	74	47
2....	72	48	71	43	75	48	67	52	71	55	74	54	62	44	73	49	63	45	68	57	62	42	76	48
3....	63	44	64	48	69	52	70	53	74	55	81	64	45	61	40	59	42	60	41	54	37	66	46	80
4....	70	43	72	33	67	46	59	49	62	52	71	52	58	40	72	31	70	39	64	40	63	35	64	40
5....	60	45	74	54	67	52	69	51	79	61	76	55	61	50	80	45	78	48	78	54	72	38	66	43
6....	62	46	76	49	77	49	85	45	91	50	89	60	74	42	74	40	72	41	74	38	67	41	79	48
7....	50	37	52	34	54	41	47	40	50	44	71	46	48	37	63	34	52	36	47	37	46	36	54	39
8....	54	38	—	—	56	37	53	39	51	45	59	39	55	39	63	28	56	36	51	35	52	36	56	37
9....	54	41	69	28	61	40	58	41	56	47	62	40	61	36	69	28	62	34	54	36	59	37	65	36
10....	71	45	72	40	69	42	61	47	62	49	67	42	64	44	74	36	72	41	73	36	70	40	71	36
11....	77	50	80	48	76	48	74	51	71	54	76	45	68	46	78	39	78	58	72	55	69	45	79	46
12....	83	59	84	50	81	53	79	55	76	59	80	51	76	50	84	49	84	60	80	42	84	50	80	42
13....	85	48	88	59	84	56	84	61	86	64	83	53	81	60	87	57	80	52	82	50	89	59	83	42
14....	61	42	79	52	82	61	87	61	88	67	88	58	67	57	80	47	76	48	83	44	72	53	65	55
15....	68	61	90	59	90	63	91	61	94	68	91	66	84	57	86	49	84	55	77	54	84	60	92	64
16....	80	57	83	62	92	68	89	61	98	66	95	70	87	67	80	60	79	57	78	63	69	53	90	61
17....	58	39	75	49	73	62	73	56	78	64	91	68	70	53	74	45	59	46	66	45	71	48	69	53
18....	62	43	85	49	83	58	76	54	79	59	86	62	65	53	91	50	66	47	66	45	68	47	60	51
19....	59	47	74	59	74	63	93	62	95	74	95	65	68	57	84	53	64	54	60	49	73	55	95	65
20....	78	54	79	61	67	62	79	57	88	63	89	68	71	57	83	45	74	51	62	45	72	47	69	66
21....	79	53	78	48	76	60	65	54	63	58	71	59	66	52	84	50	74	49	65	46	62	47	67	52
22....	75	53	—	—	80	57	68	55	69	59	74	54	70	55	84	46	79	55	78	56	75	44	80	52
23....	82	51	80	47	78	55	71	57	74	62	78	53	72	58	83	52	82	55	84	53	83	53	80	51
24....	66	48	83	49	84	58	84	61	83	70	84	67	71	56	84	50	79	58	84	55	84	50	88	60
25....	79	53	83	66	80	68	81	63	85	73	89	68	71	60	86	58	86	62	82	64	83	59	81	62
26....	79	65	86	64	84	68	92	72	91	74	92	71	75	63	86	62	83	65	76	56	78	62	87	66
27....	65	48	84	69	93	71	95	74	96	76	94	69	75	63	83	60	80	51	74	47	77	57	83	72
28....	52	44	85	83	84	66	87	72	88	81	96	73	74	63	85	61	75	48	78	55	86	59	97	72
29....	80	49	95	66	94	72	87	69	90	77	94	69	80	66	93	62	91	58	68	82	57	80	56	94
30....	80	62	90	73	91	72	95	75	99	79	98	72	83	72	86	62	86	71	93	72	91	59	97	68
Mns..	69.8	48.8	78.8b	52.8b	77.3	56.7	76.7	56.9	79.0	62.0	82.4	59.0	69.9	53.1	79.4	47.7	73.1	50.3	72.9	50.0	70.7	46.6	72.8	51.6

Date.	Lower Michigan.				Ohio.				Erie, Pa.				New York.				Vermont.								
	Detroit.		Muskegon.		Cleveland.		Lima.		Sandusky.		Toledo.		Buffalo.		Canton.		Rochester.		Syracuse.		Burlington.				
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1....	82	57	74	54	81	52	80	60	81	57	79	60	78	53	70	54	70	55	78	54	77	53	75	51	
2....	69	49	72	47	73	48	60	54	76	53	62	54	66	54	61	51	58	48	66	48	60	43	66	42	
3....	81	50	69	61	78	51	76	54	77	51	79	53	78	55	76	52	64	53	72	57	77	48	74	42	
4....	71	47	66	47	70	43	62	55	72	53	67	54	71	50	61	52	63	50	66	47	66	46	66	47	
5....	72	54	76	53	77	48	70	51	76	48	67	52	74	55	63	46	68	47	68	49	73	41	72	38	
6....	87	58	80	63	88	57	88	58	90	57	90	63	88	61	85	57	75	57	78	54	83	56	74	52	
7....	69	41	65	44	53	42	74	50	64	63	74	49	73	42	78	51	68	47	65	43	72	47	72	46	
8....	55	39	62	39	55	40	51	48	59	39	55	50	54	39	51	46	54	41	53	37	55	42	52	37	
9....	60	41	69	40	60	39	54	47	63	37	58	50	53	42	57	42	60	43	56	37	53	40	56	33	
10....	67	45	62	39	72	40	61	45	69	39	64	46	65	44	60	43	57	47	68	38	70	40	65	35	
11....	77	52	70	47	78	45	68	48	75	38	74	48	76	51	66	51	59	53	72	49	75	58	79	41	
12....	80	56	77	55	81	48	75	60	81	42	78	60	81	57	71	55	63	53	77	55	80	56	78	46	
13....	84	58	74	58	86	54	78	59	85	47	83	57	85	57	75	59	63	58	75	56	81	57	81	48	
14....	86	61	86	51	88	57	82	63	90	51	88	63	81	58	77	63	70	57	71	51	76	62	73	57	
15....	90	66	83	63	74	62	88	67	92	67	90	68	85	62	66	68	65	76	63	85	68	80	45	79	
16....	95	70	79	62	96	69	90	70	97	63	93	70	94	65	82	69	66	81	61	88	65	87	67	85	61
17....	82	63	77	69	79	67	91	65	81	67	85	65	72	61	76	59	68</td								